July 12, 1960 L. E. HOOGSTOEL 2,944,716

PACKAGING DEVICE

Filed Sept. 17, 1958

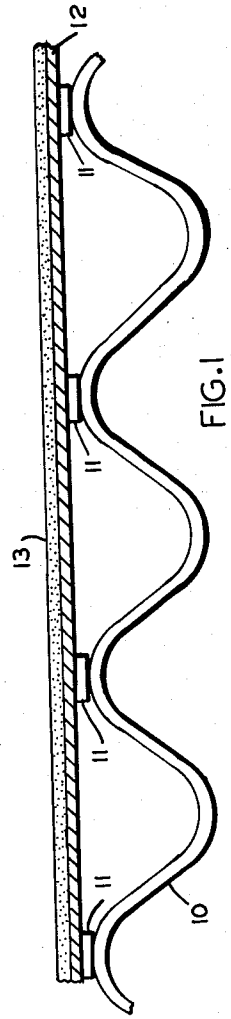


FIG. 1

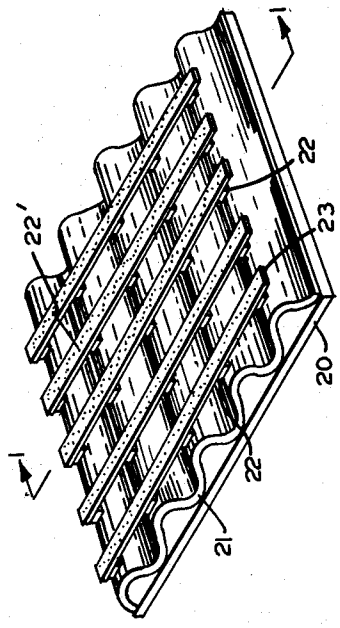


FIG. 2

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PACKAGING DEVICE

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6 Claims. (Cl. 229—14)

The present invention relates in general to a packaging device and more particularly to an improvement over the packaging device disclosed and claimed in my U.S. Patent No. 2,744,624.

The packaging device of U.S. 2,744,624 comprises a backing member having a plurality of spaced, raised, compressible and resilient areas and a pressure-sensitive adhesive covering the upper portion only of such raised areas. Articles placed on the raised areas are held in position by many contacts of limited area with the pressure-sensitive adhesive. The form of this device most commonly used commercially has been single face corrugated board having the tips of the corrugations coated with pressure-sensitive adhesive.

The above described packaging device, while generally accepted in commercial usage, sometimes is unsatisfactory due to the relatively weak internal strength of the paper used in forming the corrugations of commercially available corrugated board. This permits delamination to take place when an article is removed from the adhesive-coated corrugations or projections and the resultant "pick-off" or adherence of small bits of the adhesive-coated paper to such article. This tendency is limited and generally is not objectionable. However, where items such as polished steel ball bearings or the like are so packed, any delamination requires that the articles subsequently be cleaned and hence is objectionable. It is economically unsound, in most cases, to make the corrugated material from paper having high internal strength.

Accordingly, an object of the present invention is to provide a method for eliminating the "pick-off" of small bits of the adhesive-coated paper or the like forming the raised areas of the packaging device of U.S. Patent No. 2,744,624, and the adherence of such material to articles removed from such packaging device.

A further object is to produce a modified version of the packaging device described in my said earlier patent which will not transfer bits of the material forming the raised areas to articles packaged thereon.

Additional objects, if not specifically set forth herein, will be readily apparent to one skilled in the art from the following detailed description of the invention:

In the drawings:

Figure 1 is a schematic illustration of the basic elements of the packaging means of the present invention.

Figure 2 is a perspective view of the preferred type of packaging means of the invention.

Generally, the present invention contemplates the addition to the packaging device of U.S. 2,744,624 of an insert strip of material having a higher degree of internal adhesion than the material used to form the spaced raised areas, said strip contacting at least one of said raised areas and being held thereto by the pressure-sensitive adhesive coating on such raised area. A coating of pressure-sensitive adhesive is provided on at least the face of said strip opposite that in contact with said raised area to provide means for adhering articles to the packaging device.

The internal adhesion or strength of the material used to form the insert strip is greater than the adhesion between the pressure-sensitive adhesive and the article to be packaged in contact therewith.

Referring now to Figure 1 of the drawings, the essential elements of the present invention are illustrated schematically. Reference numeral **10** represents the raised resilient areas, e. g. corrugations. The tip only of each raised area is covered with pressure-sensitive adhesive **11**, and overlying the tips is a strip **12** of a material having a higher degree of internal adhesion than the material used to form corrugations **10**. Strip **12** it held firmly to the tips of the raised areas or corrugations by the pressure-sensitive adhesive **11**. Superposed on strip **12** is a layer of pressure-sensitive adhesive **13**.

The preferred form of the invention is illustrated in Figure 2 of the drawings. Here, in perspective, is shown the base member **20** having a plurality of spaced raised areas **21** thereon, here illustrated as corrugations. A coating of pressure-sensitive adhesive **22** is disposed between the tips of the corrugations **21** and an insert strip **23**. A second coating of pressure-sensitive adhesive **22'** covers the surface of strip **23**. In this preferred modification, the strip **23** runs at right angles to the length direction of corrugations **21**, and a plurality of such strips **23** are provided in spaced relationship across the face of the packaging member.

The pressure-sensitive adhesive contacting the spaced raised corrugations may be applied as described in U.S. 2,744,624, or the strip **23** may be coated on both sides before application to the corrugations. In this latter case, a double-faced pressure-sensitive adhesive tape such as is described in U.S. Patent No. 2,206,899 may be used.

The strip **23** should have an internal adhesion higher than that of the kraft paper or other material used to form the spaced raised areas, e.g. corrugations, and such internal adhesion should be greater than the adhesion power of the pressure-sensitive adhesive used on the surface of such insert strip. This may be accomplished by using paper which has been impregnated with a strength imparting agent such as butadiene/acrylonitrile, broken-down rubber or the like, as is described in U.S. Patents Nos. 2,726,967 and 2,410,078. Alternatively, a film or plastic strip such as regenerated-cellulose acetate, polyvinyl chloride or the like may be used. Another suitable variation is the use as an insert strip of a pressure-sensitive adhesive coated string, thread, or group of threads formed of natural or synthetic textile fibers or filaments. The pressure-sensitive adhesive may be any of those known to the art, and such adhesives are described in detail in my earlier Patent No.2,744,624.

While the preferred modification has been illustrated in Figure 2, it is also considered within the scope of the present invention to apply the insert strip parallel to the corrugation. In other words, a narrow strip of double-faced tape or the like may be applied to the tip of a corrugation and extended along such tip in the same direction as the length direction of such corrugation. In such instance, insert strips along every other corrugation are generally sufficient for the usual packaging operation.

In operation, the modification of the present invention overcomes the possibility of transfer of small bits of adhesive-coated paper to articles removed from the packaging device. Since the insert strip of paper, film, string or the like, has greater internal strength than the material forming the corrugations, the corrugations will delaminate before said insert strip, and said insert strip acts as a barrier between the article packaged and any material which may delaminate from the corrugations. Further, since such insert strip generally will contact more than one corrugation, the force tending to cause delamination, i.e. breaking of the adhesion between the article packaged

and the pressure-sensitive adhesive top coat on the packaging device, tends to be distributed by such insert strip and as a result is diminished as to any particular corrugation. Should the force required to remove the packaged article be great enough to cause delamination of one or more corrugations, the problem of removal of the adhesive-coated material from the article packaged is minimized since the bits of corrugated material will be on the opposite surface of the insert strip from the article and the insert strip can readily be pulled from the article even if it should break entirely loose from the corrugated board. While not illustrated herein, a suitable liner as described in U.S. 2,744,624 would normally be applied to the finished product of this invention pending use of the packaging device.

Obviously, many other modifications and variations of the invention as hereinbefore set forth may be made without departing from the spirit and scope thereof and therefore only such limitations should be imposed as are indicated in the appended claims.

I claim:

1. In a packaging device having a backing member with a plurality of spaced, raised, compressible and resilient, pressure-sensitive adhesive-coated areas, the improvement which comprises: an insert strip in contact with at least one of said pressure-sensitive adhesive-coated areas, said insert strip having a coating of pressure-sensitive adhesive on the surface thereof opposite the surface in contact with said areas.

2. A packaging device comprising: a backing member having a plurality of spaced, raised, compressible and resilient areas; a strip of material having high internal adhesion extending across and in contact with at least one of said raised areas and adhesively secured thereto at the upper portion only of said raised area; and a pressure-sensitive adhesive coating on the surface of said strip opposite the side in contact with said raised area.

3. A packaging device comprising: a single face corrugated board having a plurality of compressible, resilient corrugations extending across the face thereof; a plurality of strips of material having high internal adhesion, each adhesively held with its bottom surface in contact with at least one of said corrugations; and a pressure-sensitive adhesive coating on the top surfaces of said strips, said strips being spaced out of contact with each other.

4. A packaging device comprising: a single face corrugated board having a plurality of compressible, resilient corrugations extending across the face thereof; and a plurality of narrow strips of double-face pressure-sensitive adhesive tape disposed on and in adhesive contact with at least one of said corrugations, said strips being spaced apart from each other.

5. A device as in claim 4 wherein said strips extend at right angles to the length direction of said corrugations.

6. A device as in claim 4 wherein said strips extend parallel to the length direction of said corrugations.

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